



Existing and Planned GES DISC services and A Use Case for a “Data List” from Multiple Products Collocated with Greenland Station Observations

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Outline

- Transition to User Registration using the Earthdata Login
- Existing Subsetting Capabilities
- Planned Subsetting Capabilities for the the New GES DISC Web page
- User Forum
- Data Lists
- Data Lists use case: AIRS and MERRA data matched up with Greenland Station observations



Earthdata Login

- Earthdata Login provides a single mechanism for user registration and profile management for all EOSDIS system components (DAACs, Tools, Services).
- This is being implemented across all EOSDIS data centers!
- Required for all EOSDIS services such as NASA Worldview, not just data center access.
- Data are still free of charge to the public!
- Uses the https protocol for secure access
- Allows EOSDIS to better track data usage and understand its users needs.



Earthdata Login

- GES DISC has implemented Earthdata Login as of July 2016
- Step 1: Register with Earthdata Login and setup username and password
<https://urs.earthdata.nasa.gov>
- Step 2: Approve **NASA GESDISC DATA ARCHIVE** to use your Login profile for authentication
- **IMPORTANT:** FTP access will end on Monday October 3, 2016.



New GES DISC Website

- The GES DISC is overhauling its web site with a new Unified User Interface
<http://disc.gsfc.nasa.gov/uui/>
- Combine data products, documentation and services into a single location (reduce confusion for users on which subsetter, visualizer or other service to choose from)
- Allow users to search/find/navigate to **ANY RESOURCE**
 - a) Data Granule Downloads (bulk and individual)
 - b) Data Subsetting
 - c) Data Visualization Services
 - d) Data Documentation
 - e) Data Landing Pages




The Old GES DISC page


disc.gsfc.nasa.gov


GES DISC

Goddard Earth Sciences Data and Information Services Center





National Aeronautics and
Space Administration

Google™ Custom Search 

 **IMPORTANT MESSAGE Jun 28, 2016** Access to GES DISC data will require all users to be registered with the Earthdata Login system

Starting August 1st, 2016, access to GES DISC data will require all users to be registered with the Earthdata Login system. Data will continue to be free of charge and accessible via HTTP. Access to data via FTP will no longer be available after October 3rd, 2016. Detailed instructions on how to register and receive authorization to access GES DISC data are provided [here](#).

GES DISC Users who deploy scripting methods to list and download data in bulk via anonymous FTP are advised to review the [How to Download Data Files from HTTP Service with wget](#) recipe that provides examples of GNU wget commands for listing and downloading data via HTTP.

Earth Science Data	Mission Portals	Science Portals	About Us
> Search with Mirador 	> A-Train	> Atmos Composition	> Who We Are
> Visualize with Giovanni 	> AIRS	> Hydrology	> Data Policy
> Subset Data	> Aura	> Precipitation	> FAQ
> Data Cookbook	> GPM	> MAIRS	> Publications
> Get Near Real-Time Data	> Modeling	> Ozone	> Gallery
> GDS	> MEaSURES	> Aerosols	
> Nimbus	> OCO-2		
	> TRMM		
	> SORCE		
+ More...	+ More...		

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The New GES DISC page

disc.gsfc.nasa.gov/uui

GES DISC

AIRS



Feedback Help

Atmospheric Composition, Water and Energy Cycle, and Climate Variability Data

01
10 Datasets

Showing (290) datasets associated with AIRS for date range 1920-01-01 to 2016-09-15...

Refine By

Subject Sort -

- ☐ Aerosols (35)
- ☐ Air Quality (36)
- ☐ Altitude (77)
- ☐ Atmospheric Chemistry (107)
- ☐ Atmospheric Pressure (124)
- [More...](#)

Measurement Sort -

- ☐ Absorption (6)
- ☐ Aerosol Backscatter (14)
- ☐ Aerosol Extinction (28)
- ☐ Aerosol Optical Depth (11)
- ☐ Aerosol Optical Depth/Thickness (11)
- [More...](#)

Source Sort -

- ☐ Aqua AIRS (69)
- ☐ Aqua AMSR-E (1)
- ☐ Aqua AMSU-A (20)
- ☐ Aqua HSB (6)
- ☐ Aqua MODIS (6)
- [More...](#)

Processing Level Sort -

- ☐ 1 (24)
- ☐ 2 (51)
- ☐ 3 (100)
- ☐ 4 (115)

Temporal Resolution Sort -

Image	Dataset	Source	Temporal Resolution	Spatial Resolution	Process Level	Begin Date	End Date
	AIRS/Aqua L3 8-day Support Product (AIRS-only) 1 degree X 1 degree V006 (AIRS3SP8.006) - Altitude, Atmospheric Chemistry, Atmospheric Pressure	Aqua AIRS	8 days	1° x 1°	3	2002-08-30	present
	AIRS/Aqua L2 Standard Physical Retrieval (AIRS-only) V006 (AIRS2RET.006) - Altitude, Atmospheric Pressure, Atmospheric Temperature	Aqua AIRS	12 hours	50 km x 50 km	2	2002-08-30	present
	AIRS/Aqua L3 Daily Standard Physical Retrieval (AIRS-only) 1 degree x 1 degree V006 (AIRS3STD.006) - Altitude, Atmospheric Pressure, Atmospheric Temperature	Aqua AIRS	12 hours	1° x 1°	3	2002-08-30	present
No Sample Image	AIRS/Aqua L3 Monthly Quantization in Physical Units (AIRS-only) 5 degrees x 5 degrees V006 (AIRS3QPM.006) - Atmospheric Temperature, Atmospheric Water Vapor, Clouds	Aqua AIRS	1 month	5° x 5°	3	2002-08-30	present
	AIRS/Aqua L3 Monthly Support Product (AIRS-only) 1 degree x 1 degree V006 (AIRS3SPM.006) - Altitude, Atmospheric Chemistry, Atmospheric Pressure	Aqua AIRS	1 month	1° x 1°	3	2002-08-30	present
	AIRS/Aqua L2 8-day Standard Physical Retrieval (AIRS-only) V006 (AIRS2RET.006) - Altitude, Atmospheric Pressure, Atmospheric Temperature	Aqua AIRS	8 days	1° x 1°	2	2002-08-30	present

GES - DISC

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Data Information Services Center



Current Web Interfaces for obtaining Subsets

Mirador: A data discovery tool that allows spatial and variable subsetting and data format conversion under some conditions

Simple Subset Wizard (SSW): A somewhat simpler data discovery tool that allows spatial and variable subsetting and data format conversion under some conditions



Current Web Interfaces for obtaining Subsets

mirador.gsfc.nasa.gov

disc.sci.gsfc.nasa.gov/SSW

Keyword: AIRX2RET
Start Time: 2002-09-06
End Time: 2002-09-06 23:59:59
Location: (20,-100),(40,-70)



Current Web Interfaces

Mirador

Simple Subset Wizard (SSW)

AIRX2RET.006 - Quality Screening and Variable Subsetting Service Options

Quality-Screen and Subset Variables for AIRX2RET. Each variable in a data file can be screened following procedures prescribed by the AIRS Science team, or excluded completely from the output. ([more info](#)) For more information on each of the variables see: [Variable Explanation](#). Documentation on the Quality Screening process: [Quality Criteria Explanation](#)

Quality Screening and Variable Subsetting

Output Format Options



Submit

Quality Screening Global Selections:

☐ Best * ☒ Good ** ☐ NoScreening ☐ DoNotInclude

You may refine your selections below.

Select **Good** to screen all variables to follow Science Team criteria)

SUBSETTING Choice: Select **DoNotInclude** to remove the variable from the subset

Variable Refinement Selection

Moisture_Variables ☐ Best * ☒ Good ** ☐ NoScreening ☐ DoNotInclude

H2OMMRStd ☐ Best ☒ Good ☐ NoScreening ☐ DoNotInclude

H2OMMRLevStd ☐ Best ☒ Good ☐ NoScreening ☐ DoNotInclude

H2OMMRSat ☐ Best ☒ Good ☐ NoScreening ☐ DoNotInclude

RelHumSurf ☐ Best ☒ Good ☐ NoScreening ☐ DoNotInclude

totClIdH2OStd ☐ Best ☒ Good ☐ NoScreening ☐ DoNotInclude

1. Search for Data Sets

2. Select Subset Criteria

3. View Results

Found 1 subsettable data set.

Subset: Variables for AIRX2RET v006 in

Air Temperature Variables

☐ TAirStd

☐ TAirStd_QC

☐ TAirStdErr

☐ TSurfAir

☐ TSurfAir_QC

☐ TSurfAirErr

☐ Temp_dof

Ancillary Along-Track Data Fields

Ancillary Full-Swath Geolocation Fields

Ancillary Full-Swath Surface Information from Geolocation

Ancillary Per-Granule Data Fields

Attributes

Carbon Monoxide Variables

Cloud Formation Variables on 3 by 3 AIRS Fields of View

- Only Variable subsets are supported
- Spatial Subsetting of Level 1 and Level 2 data is not supported.
- The SSW has 2000 file limit and Mirador has a 30000 file limit.
- Mirador allows for quality screening the Level 2 variables.



Other Current Subsetting Capabilities

- **Level 1 and Level 2**
 - OPeNDAP
 - HTTP Service (used by Mirador and SSW)
 - Pomegranate
- **Level 3**
 - OPeNDAP (used by Mirador and SSW)
 - Pomegranate

These services may also be accessed interactively by user defined scripts.



Current Subsetting Capabilities Using Scripts

“Data recipe” on downloading spatial and variable subsets of OCO-2 L1B data using OpenSearch and OPeNDAP can be applied to other data sets.

[GES DISC Home](#) [Data Cookbook](#)

[Find Info](#) / How to download a spatial and variable subset of Level 1B data using OPeNDAP

How to download a spatial and variable subset of Level 1B data using OPeNDAP

Overview:

This data recipe demonstrates how to extract a subset of variables for part of an OCO-2 orbit using OPeNDAP. Downloading one full orbit of OCO-2 Level 1B data from the GES DISC (Goddard Earth Science Data Information and Services Center) can take more than 10 minutes even over a fast internet connection. However, if a user is only interested in one small region, it is not necessary to download the entire orbit. The procedure below describes how to identify granules in a region of interest and read just the Longitude and Latitude from the file to find the indices for the geographic region of interest. The procedure also shows how the indices can be used to read spatial subsets into Python over the internet or to create a url that will download a NetCDF-4 file containing only the data in the selected region of interest. A small spatial and variable subset of OCO-2 radiances can take seconds to download rather than minutes.


Best When:

This tutorial works best when a spatial subset of just a few variables in a limited region is needed. Although it is possible to generate a subset of many variables, the URL can become very long since the indices must be specified for each variable downloaded.

Task: Obtaining Data

Example:

The procedure in this tutorial describes how to extract a subset of OCO-2 Level 1B radiances within a bounding box of longitude and latitude. In this example only the radiance data within a 5x5 degree box centered on Mauna Loa are obtained. However, the procedure can be modified to download other regional selections for any dataset available through OPeNDAP.

**GES DISC**
Earth Science Data Information and Services Center



Subsetting Capabilities Under Development

Subsetting capabilities will be integrated into the new GES DISC web page.

Almost all functionality should remain as well as several enhancements:

- Remove current limitations on number of files in the download list. (*there still may be some restrictions*)
- Enable spatial subsets of Level 1 and Level 2 data.
- Enable aggregation of variables:
 - Time aggregation
 - Aggregation accross different data sets (we call this a “Data List”)



Subsetting Capabilities Under Development

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 - Aggregation across different data sets (we call this a “Data List”)



User Forum

The User forum is the result of a User Working Group Recommendation and will allow interaction among data **users, providers, and producers.**

Welcome to the Earthdata Forums!

The purpose of this page is to improve user service quality and efficiency of NASA Earth science data by providing a quick and easy way to facilitate scientific discussion among scientists and users.



Search

To post, an [Earthdata Login](#) account is needed.

> [Click here for directions on how to use the forum](#)

Requirements for posting to this forum.

> [Click here to expand...](#)

> Announcements

> ASDC Information

> ASF DAAC Information

> GES DISC Information

> GHRC Information

> LP DAAC Information

> NSIDC Information

> ORNL DAAC Information

> PO.DAAC Information

> SEDAC Information

> General Discussion Forum

> Atmospheric Science Data

> Cryospheric Science Data



User Forum

The format is still under development but the forum should be public soon.

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▼ GES DISC Information

GES DISC

Goddard Earth Sciences Data and Information Services Center

General Questions	Author	Topics / Replies	Last Reply
GES DISC FAQ GES DISC FAQ	5 days ago Ross Bagwell	0 / 0	5 days ago Ross Bagwell
GES DISC Announcements GES DISC Announcements	5 days ago Ross Bagwell	0 / 0	5 days ago Ross Bagwell
GES DISC Data Recipes GES DISC Data Recipes	5 days ago Ross Bagwell	0 / 0	5 days ago Ross Bagwell



Data Lists

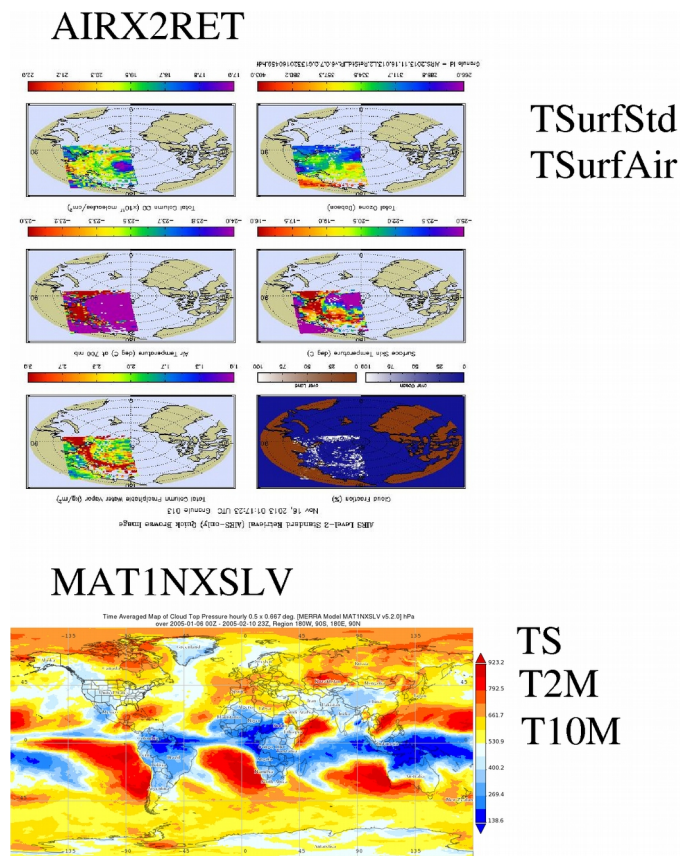
“Data Lists” are like “Play Lists” of music which may contain songs from different albums but data lists will contain variables from different data sets.



Subterranean Homesick Blues
Mr. Tambourine Man



Mr. Tambourine Man





Data List Mockup

M
O
C
K
U
P

EARTHDATA

Data Discovery ▾ DAACs ▾ Community ▾ Science Disciplines ▾

GES DISC

Atmospheric Composition, Water and Energy Cycle, and Climate Variability Data

hurricanes

Q

0

Feedback

Help

01
10

Collections

Showing NNN collections associated with

Refine By

Subcategory

☐ All

☐ Atmospheric Phenomena (NNN)

☐ Atmospheric Pressure (NNN)

☐ Atmospheric Radiation (NNN)

☐ Atmospheric Temperature (NNN)

[More...](#)

Events

☐ Cold Wave (NN)

☐ Drought (NN)

☐ Dust Storm (NN)

☐ Fire (NN)

☐ Heat Wave (NN)

[More...](#)

Measurements

☐ Precipitation (NN)

☐ Temperature (NN)

☐ Wind (NN)

Sources

☐ [Models/Analyses MERRA](#) (NN)

☐ [Models/Analyses MERRA-2](#) (NN)

Processing Level

☐ L4 (NNN)

Dataset

Hurricanes

Score: 0.95 ▾

Download

Shopping Cart

Options for Hurricanes

Refine Date Range: 2014-02-01 to present

Select Variables: Get All Variables

Select Dimensions: Get All Dimensions

Select Region(s): Global

Reset

Get Data

Image

(M2SDNXSLV.5.12.4)

Score: 0.51 ▾

Download

Shopping Cart

MERRA-2 statID_2d_slv_Nx: 2d,Daily,Aggregated Statistics,Single-Level,Assimilation,Single-Level Diagnostics (M2SDNXSLV.5.12.4)

Score: 0.51 ▾

Models/Analyses MERRA-2

1 day

0.5 ° x 0.625 °

4

1980-01-01

present

End Date

present

present

present

present

System shows download options panel which includes services configured for the data list (via it's dataset variables); this panel also allows the users to completely skip selecting options and just download the data



Data Lists: Greenland station use case

Intercomparison of Surface Temperatures from AIRS, MERRA, and MERRA2, with NOAA and GCNet Weather Stations at the summit of Greenland

Thomas Hearty, Jae Lee, Dong Wu, Christopher
Shuman, Richard Cullather, John
Blaisdell, Joel Susskind



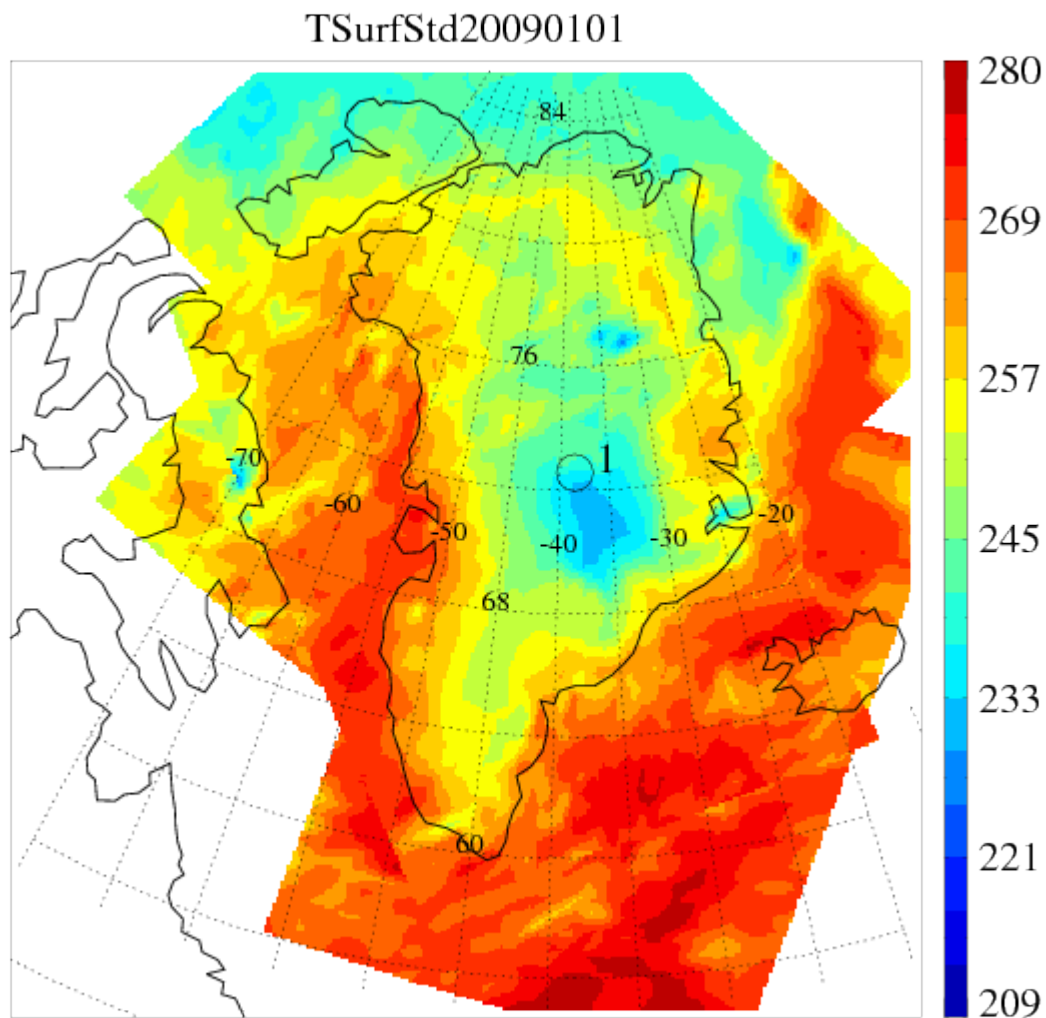
Data Lists: Greenland station use case

The following use case describes a data list comprised of variables from multiple data sets that are matched up in Time and Space with Greenland Station Observations:

- AIRX2RET (**TSurfStd**, **TSurfAir**, **CldFrcTot**)
- AIRI2CCF (**scanang**)
- AIRABRAD (**brightness_temp**)
- MAT1NXSLV (**TS**, **T2M**, **T10M**)
- M2T1NXSLV (**TS**, **T2M**, **T10M**)



Data Lists: Greenland station use case



Typically there are 4-5 observations per day at Greenland's summit



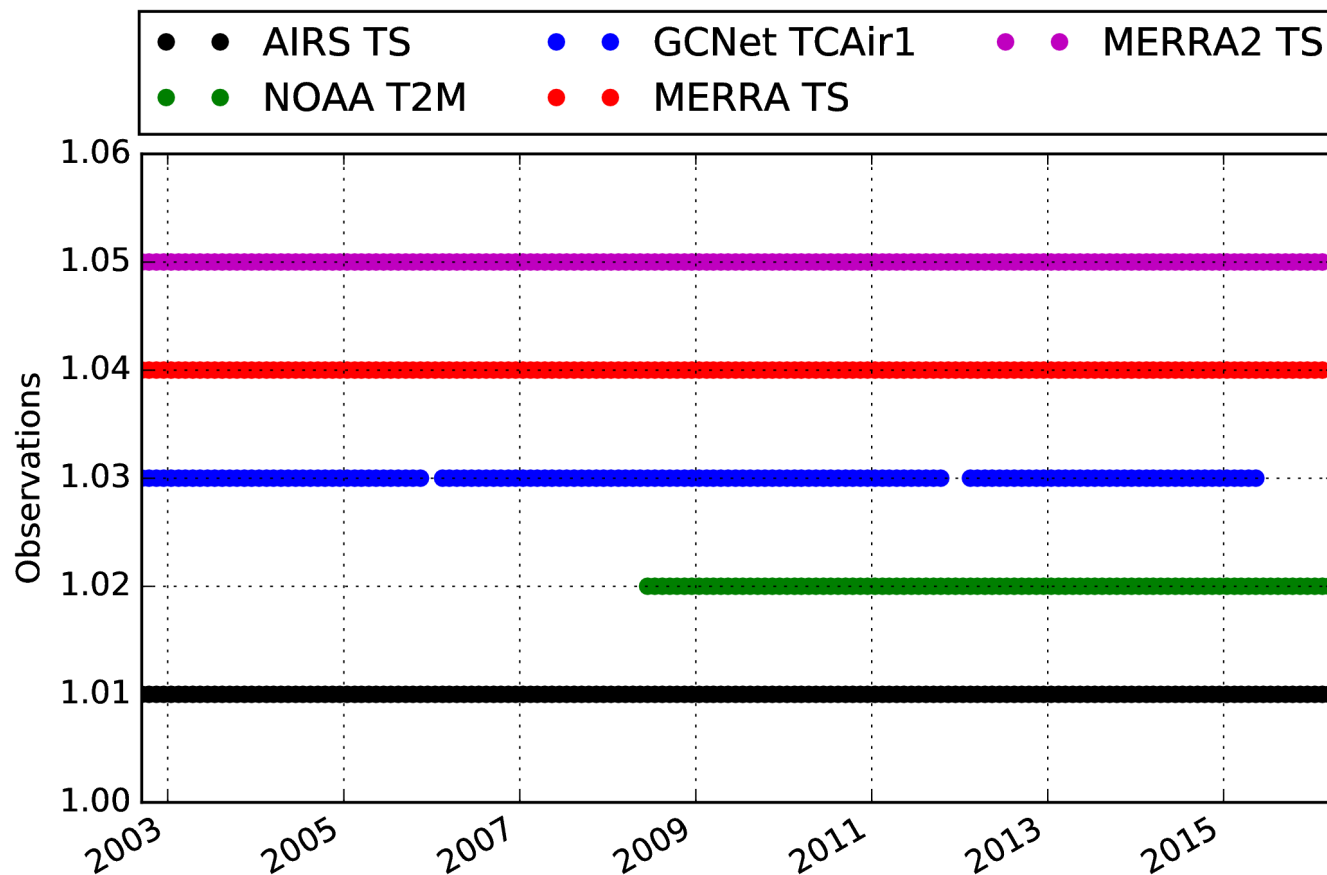
Data Lists: Greenland station use case

- Includes all AIRS observations **within a 30 km radius** of a point midway between the NOAA and GCNet Stations
- The NOAA and GCNet stations are separated by ~ 0.67 km
- NOAA Station measures the 2-meter and 10-meter temperatures
- GCNet Station measures ~ 1 -meter and 2-meter temperature



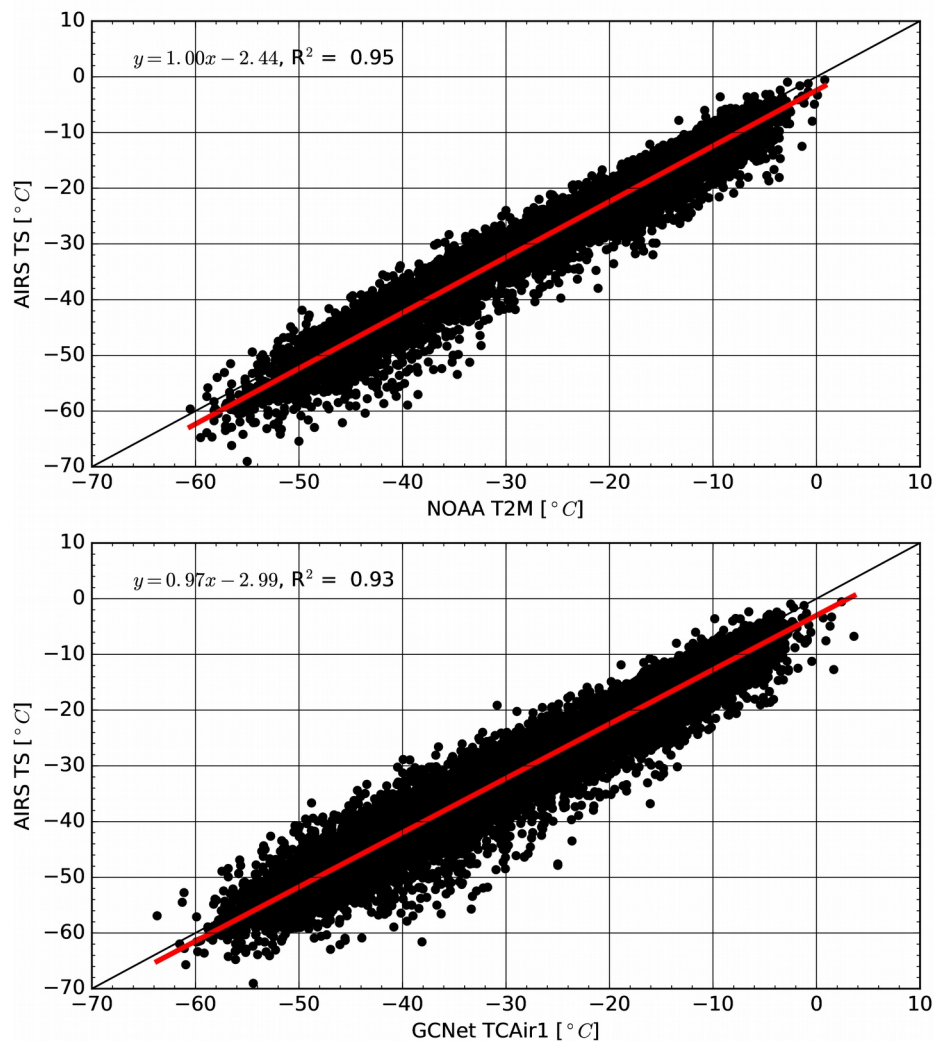
Data Lists: Greenland station use case

Temporal Coverage 2002/09-2016/03





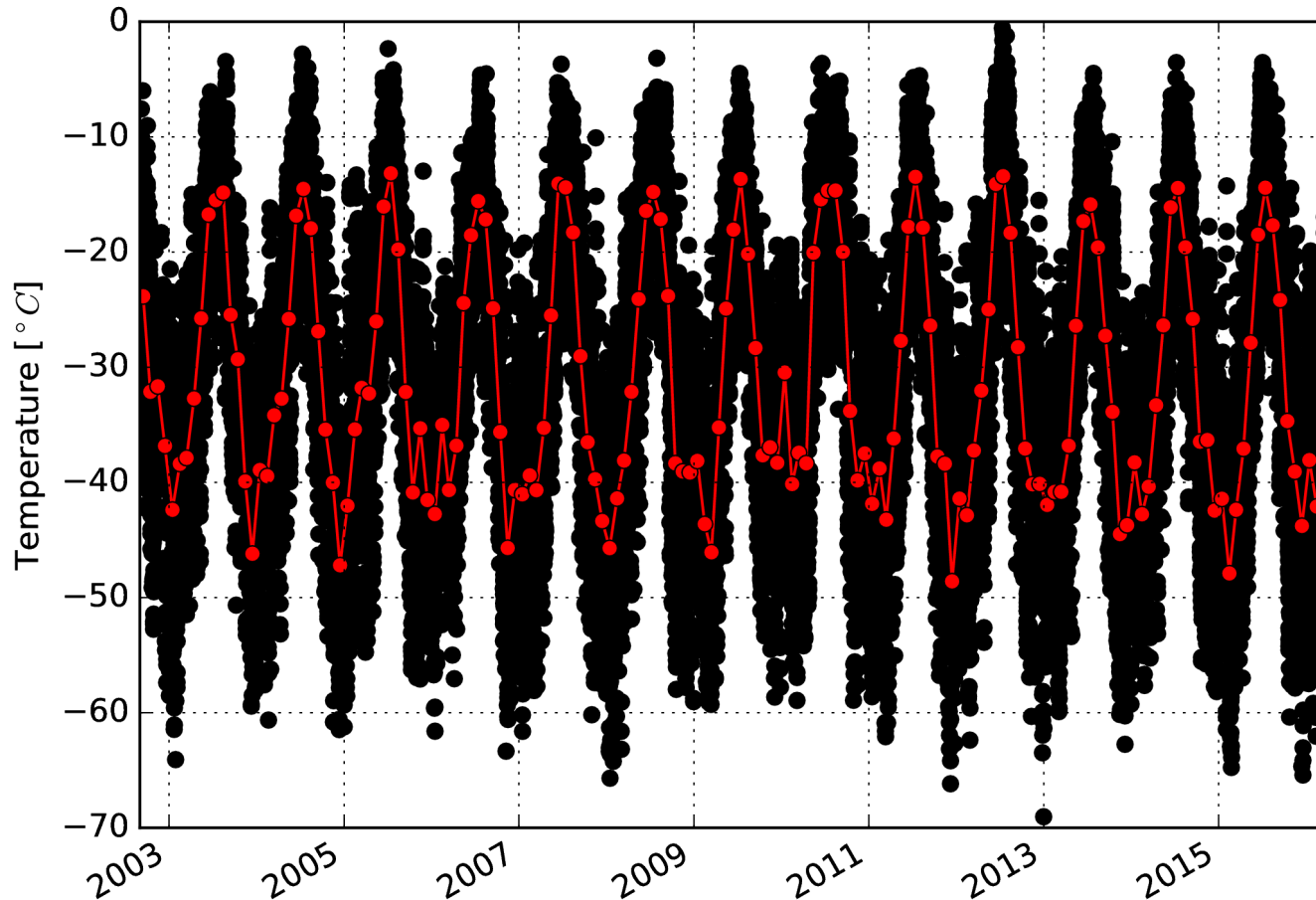
Data Lists: Greenland station use case



There is a fairly good agreement between the AIRS Surface Temperature (TS) and the NOAA T2M and GCNet TCAir1)



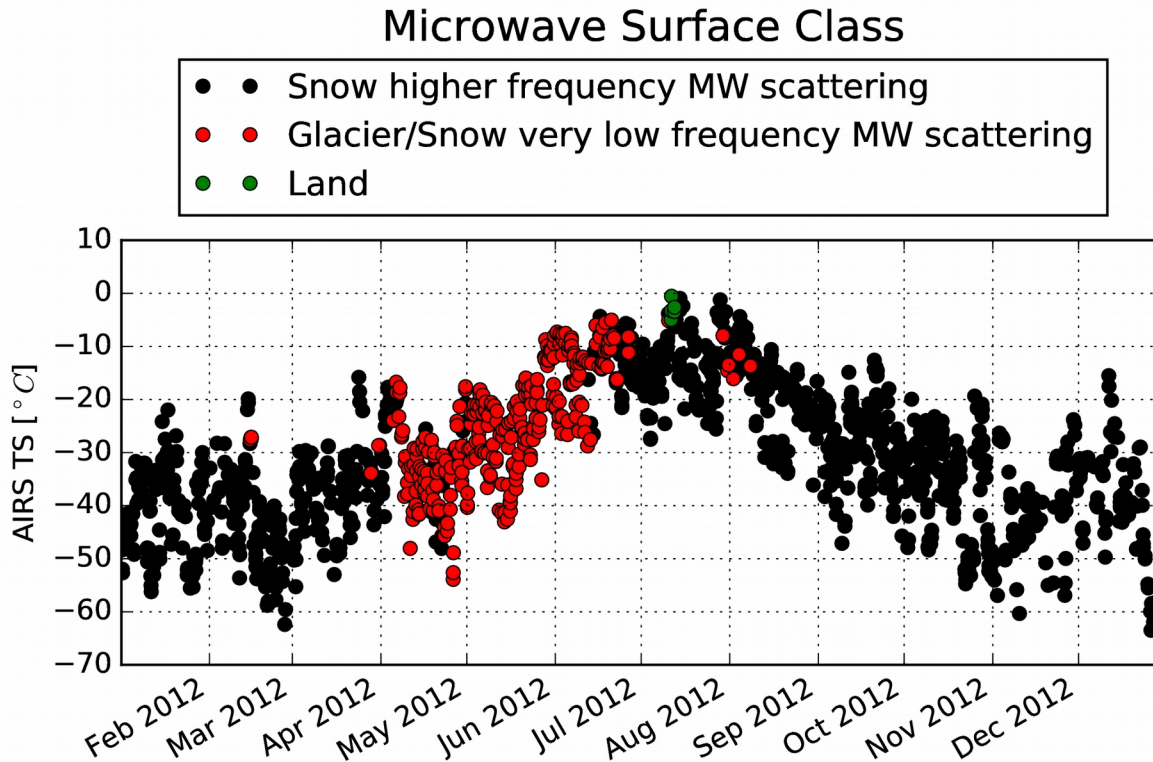
Data Lists: Greenland station use case



A time series of all 23,278 AIRS Surface Skin Temperature measurements. The red points are monthly averages.



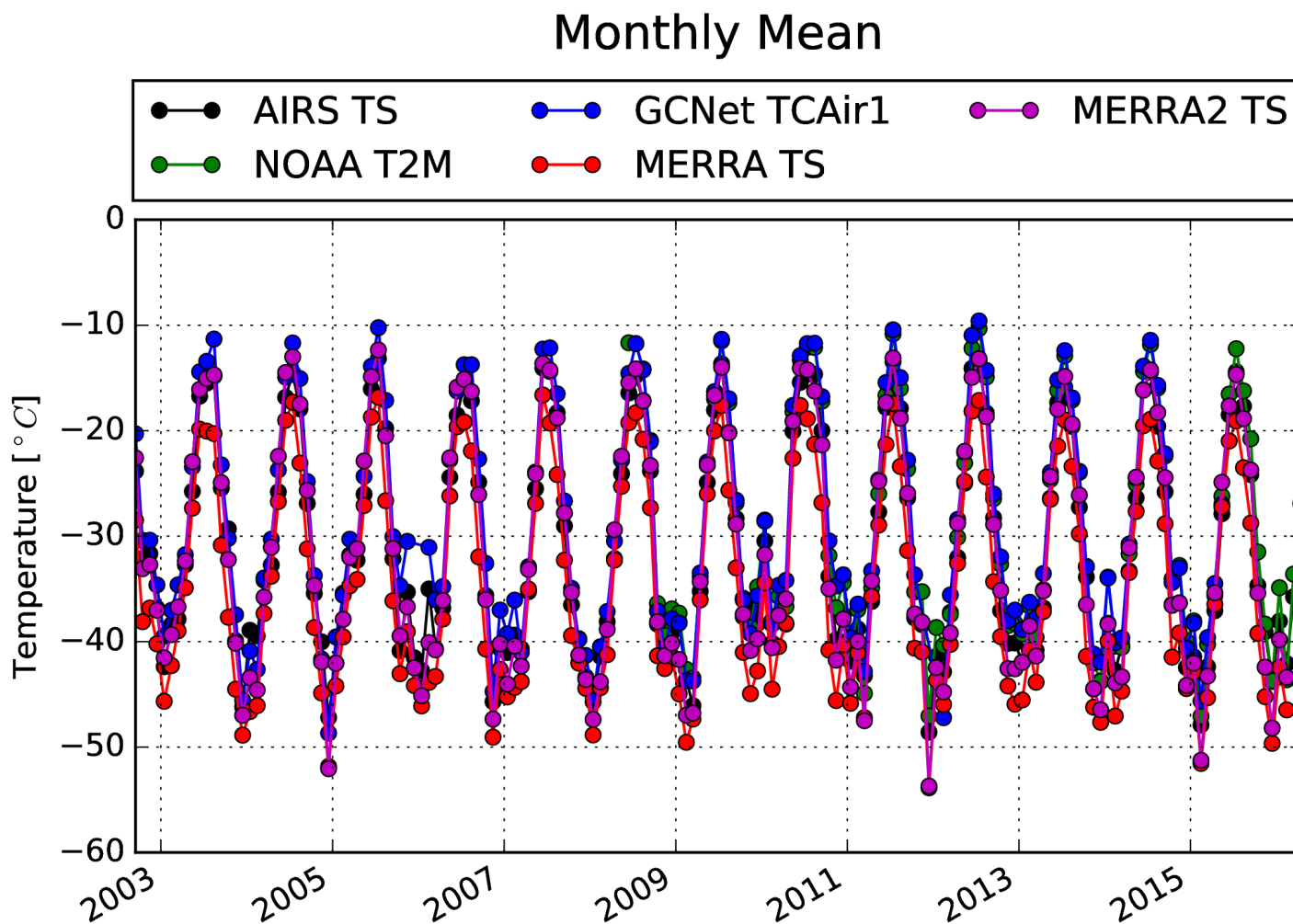
Data Lists: Greenland station use case



The melting at the summit of Greenland in July 2012 caused a change in the Microwave emissivity such that the MWSurface Class reported land

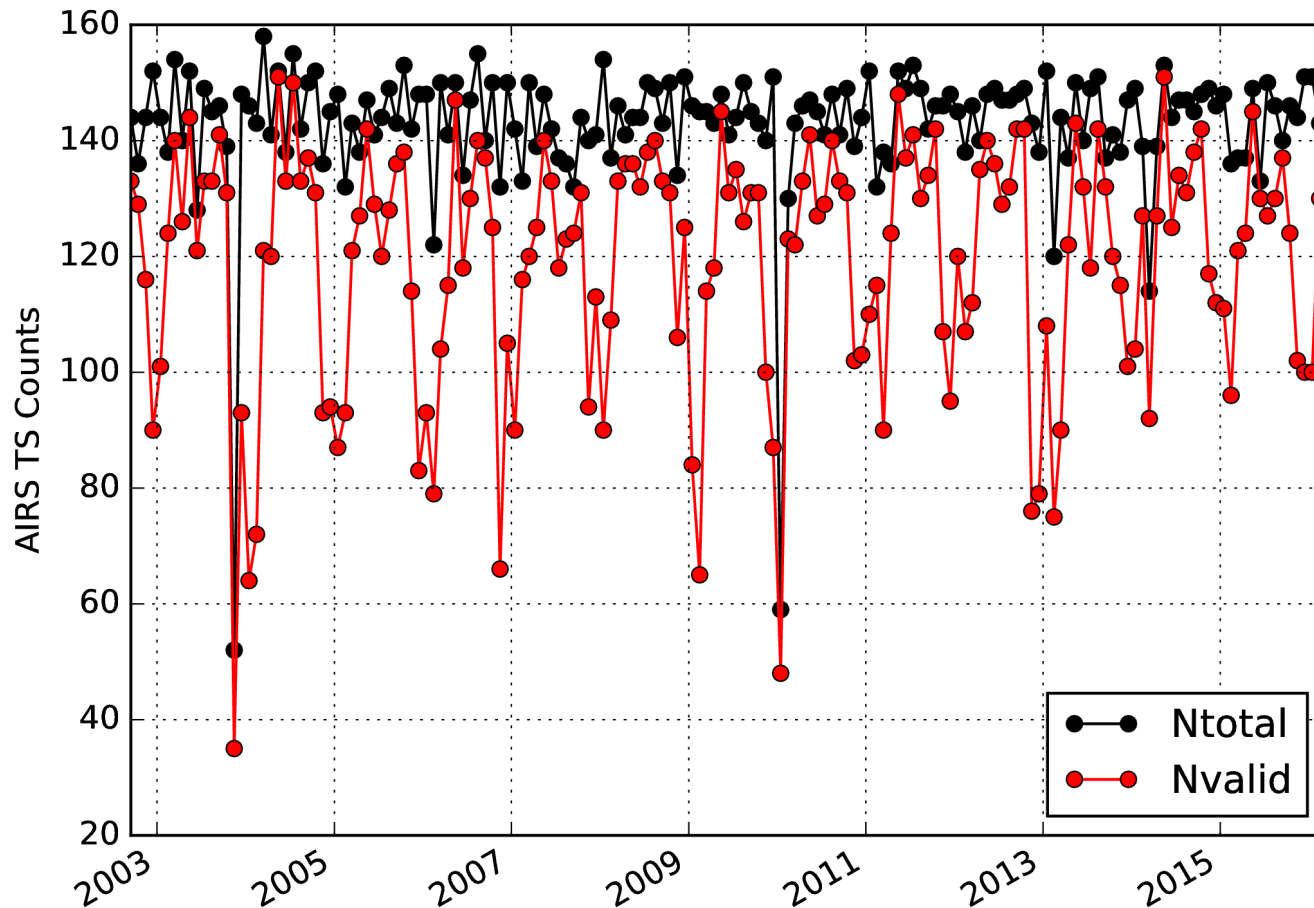


Data Lists: Greenland station use case





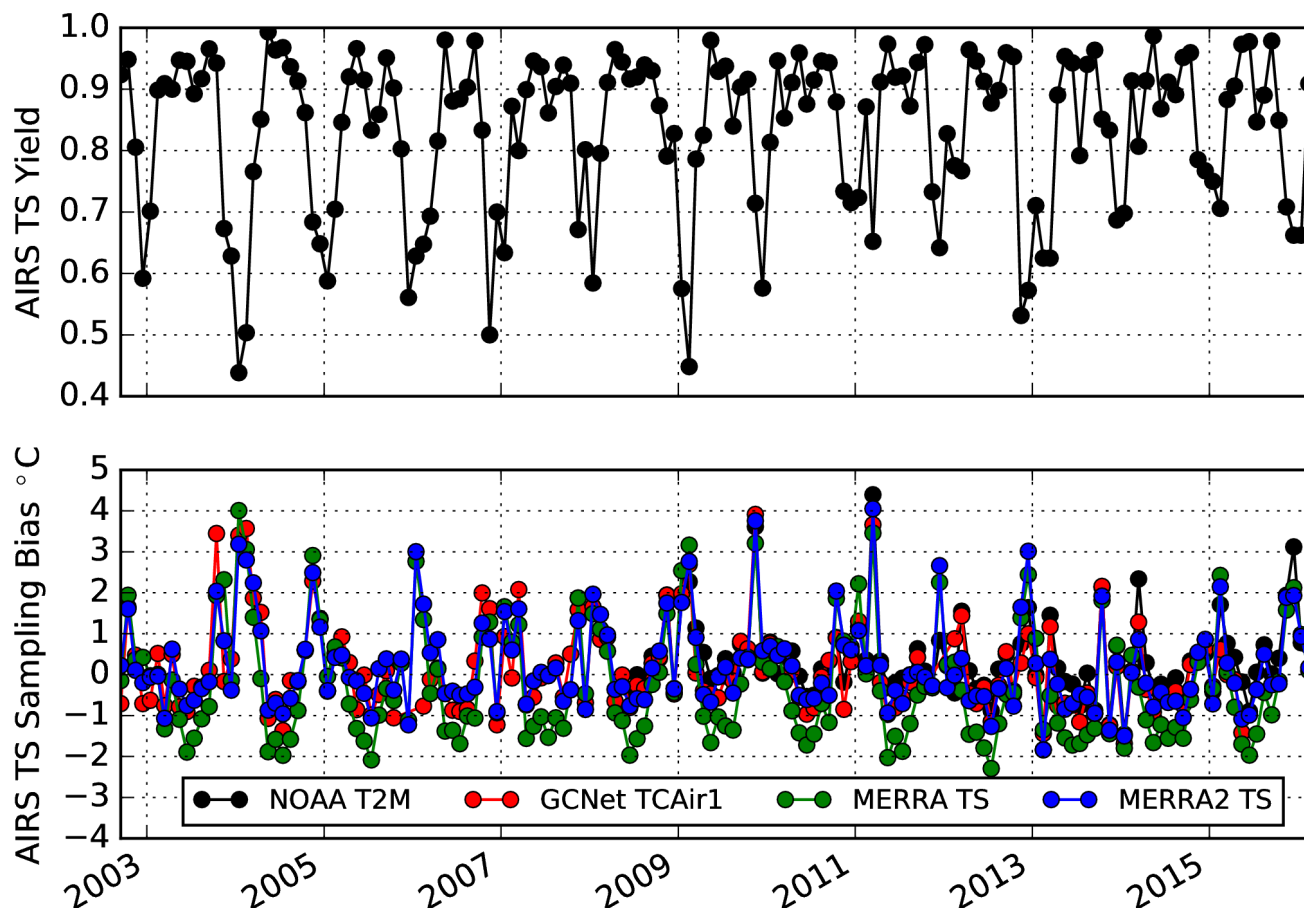
Data Lists: Greenland station use case



There is a significant decrease in the yield during the winter.



Data Lists: Greenland station use case



- The sampling bias can be as much as $+4^{\circ}$ in the winter
- The sampling bias estimates from MERRA2 agree with those using the station measurements
- MERRA shows an anomolous -2° sampling bias in the summer



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